

SOLSPEC Investigation: Measurement of the Absolute Spectral Irradiance from 165 to 3080 nm On-Board SOLAR placed on the International Space Station

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SOLAR is a set of three solar instruments measuring the total and spectral irradiance from 16 to 3080 nm for solar, atmospheric and climatology physics. It is an external payload for the COLOMBUS laboratory expected to be launched in December 2007.

The absolute spectral irradiance and its variation are a key input for the understanding of the main properties of the planetary atmospheres such as the composition, thermal structure and dynamics. Climate physics also requires the precise knowledge of the solar spectrum variation in the field of research of the sun-climate connection.

Given the significant improvements in atmosphere modeling, increased accuracy data are needed. Furthermore, solar atmosphere modeling also requires such accurate measurements.

The SOLSPEC objectives is the measurement of the absolute spectral irradiance and its variability from 165 to 3080 nm with the best today achievable accuracy. SOLSPEC has been developed by Service d'Aéronomie (France), Institut d'Aéronomie Spatiale de Belgique, and Landessternwarte (Germany). The instrument is composed of three double spectrometers using concave gratings, including reference sources to check its stability during the three-year mission. SOLSPEC benefits of the heritage of a similar instrument, which flew five times in space (SL1, ATLAS 1-2-3 and EURECA).

It has been recently calibrated by using the black-body of the Physikalisch-Technische Bundesanstalt (PTB), Braunschweig. The absolute calibration performance will be reported as well as the expected accuracy ranging from 1 to 2 percents of the solar measurements in orbit. Today, the launch date is 6 December with first solar observations in early January 2008. If that schedule is achieved, the first solar spectra obtained in orbit will be shown.